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Government of Kerala  
കേരള സർക്കാർ  
2011



Reg. No. റജി. നമ്പർ  
KL/TV(N)/12/2009-2011

# KERALA GAZETTE

## PUBLISHED BY AUTHORITY

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		19th Magha 1932 1932 മാർച്ച് 19		

## PART III

### Stores Purchase Electrical Inspectorate Department

#### TENDER NOTICES

No. G1-19928/CEI/2010.

27th January 2011.

Sealed tenders are invited by Chief Electrical Inspector for the supply of the following items to Department of Electrical Inspectorate.

ഇലക്ട്രിക്കൽ ഇൻസ്പെക്ടറുടെ ഡിപ്പാർട്ട്മെന്റിലേക്ക് ആവശ്യമായ ഉപകരണങ്ങൾ വാങ്ങുന്നതിന് ചീഫ് ഇലക്ട്രിക്കൽ ഇൻസ്പെക്ടർ മുദ്രവച്ച ദർശാസ്വകൾ ക്ഷണിക്കുന്നു.

(1)

[Tender No.—2/2010-11/CEI]

Name of item	—	Three Phase Fully Automatic Energy Meter Test System.
Quantity	—	1 (One).
Earnest Money Deposit	—	₹ 32,000.
Cost of tender form :		
Original	—	₹ 5,000 (Including VAT).
Duplicate	—	₹ 2,500 (Including VAT).
Closing date and time for sale of tenders	—	16-2-2011 at 12 Noon.
Due date and time for receipt of tenders	—	16-2-2011 at 3 p.m.
Due date and time for opening of tenders	—	16-2-2011 at 3.30 p.m.

(If the due date for receiving and opening the tenders happens to be declared holiday, then the tender will

be received and opened on the next working day, for which given.)

no prior intimation will be

Required number of tender copies — 2.

Place at which tenders will be opened — In the Chamber of the Chief Electrical Inspector, Thiruvananthapuram.

*Note* :— Tender documents should be duly signed and stamped on each and every page and all Schedules duly filled in will be submitted by the tenderer along with his offer. Otherwise the offer will be liable for rejection.

உபகரணத்தின்றி பேசு	—	பூர்ணமாயும் சுயம் நியநிதிமாய தீவி பேரவை ஏற்றுக்கொண்டு மீட்டர் எட்டு சிலை-1 ஏண்டு.
நிரத்துவம்	—	32,000
அறையாஸ் போர்த்தின்றி வில (மூலம் வர்த்தித நிகுதி உச்சேஷன்) :	—	5,000
அணை	—	2,500.
அறையாஸ் போர்த் தீவிரத்துவம் அவசான தீயதியும்	—	16-2-2011, 12 மணி.
சுயமாயும்	—	
ஆட்டினிச்சதும் சீல் செய்ததுமாய அறையாஸுக்கள்	—	16-2-2011 வெகுனேரம் 3 மணிவரை.
ஸ்ரீகார்க்கூடம் அவசான தீயதியும் சுமத்துவம்	—	
அறையாஸுக்கள் தூர்க்கூடம் தீயதியும் சுமத்துவம்	—	16-2-2011 வெகுனேரம் 3.30 மணி.

#### TECHNICAL SPECIFICATION

The fully Automatic Energy Meter Test System shall be capable of testing all types of meters:—

- 1 phase direct connected
- 3 phase direct connected
- 3 phase 3 wire CT operated
- 3 phase 4 wire CT operated

It shall be possible to test the direct connected meters without opening the link.

The Test Station shall comprise of the following:—

- (1) 3 programmable Voltages & 3 programmable current sources, fully isolated.
- (2) Standard 3 phase Reference Standard.
- (3) Windows based Software for the operator to perform all standard test, develop meter test plans and calibrate the system to an external reference standard.
- (4) Quick Connection adaptors for easily connecting Meter Under Test.
- (5) It shall be possible that the voltage, current and phase angle values are displayed while the meter is under test.

It shall conform to the specifications detailed below:—

#### Voltage & Current Source

##### *Input*

240 V  $\pm 10\%$ , 50 Hz, 750 VA.

*Output*—Three independent, solid-state voltage and current amplifiers which are regulated to their programmed values. The operator should be warned if the amplifier output distorts excessively.

*Programmable Current*—Three isolated, independent floating currents, 0 to 120 A each programmable with a resolution of 0.01 A

*Programmable Voltage*—Three independent, wye-connected potentials, 0 to 600 Vac, each programmable with a resolution of 0.1 V

*Programmable Phase*—Each of the three current and voltage channels shall be programmable for 0 to  $360^\circ$ , with a resolution of  $0.1^\circ$ . Phase accuracy at the meter shall be within  $\pm 1^\circ$  or  $\pm 1.5^\circ$  at currents below 0.2A

*Voltage Amplifier Regulation*— $\pm 1\%$  @ 10 to 100% of range.

*Current Amplifier Regulation*— $\pm 1\%$  or  $\pm 5$  mA whichever is greater @ 10 to 100% of range.

*Current and Voltage Distortion*— $\pm 0.5\%$  THD.

*Accuracy*—The Reference Standard Accuracy shall be as under.

<i>Measurement Type</i>	<i>System Accuracy (23° C)</i>	
	<i>Typical</i>	<i>Worst Case</i>
Watt-hour, VA- hour @ 1.0 pf	± 0.02%	±0.05%
Watt-hour, VA @ 0.5 pf	± 0.03%	±0.10%
Q-hour @ 1.0 pf	± 0.03%	±0.10%
Q-hour @ 0.5 pf	± 0.02%	±0.05%
VAR @ 0.0 pf	± 0.02%	±0.05%
VAR-hour @ 0.866 pf	± 0.03%	±0.10%

### **Protective Circuits**

Each system should monitor itself for over-temperature, over current and harmonic distortion. Open current or shorted voltage coils should result in amplifier shutdown and warning to the operator.

### **Energy Measurement Reference Standard**

The three-phase energy reference standard shall have a maximum current of 120 Amperes and voltage of 600 Volts per phase, respectively and shall support interpretation, display and testing of Watt-, VAR-, VA-and Q-hour.

### **Optical Sensor System and Pulse Inputs**

The optical sensor system for taking the input pulses shall be universal and capable of measuring disk revolutions in reflect, LED, LCD and through hole detection modes without the use of any extra adapters. It shall be possible to easily adjust the alignment and sensitivity with minimal operator interference.

### **Bar code Reader Interface**

The test system shall support a barcode reader.

### **Software**

Easy-to-use Software that support Windows ® 95, 98, 2000, ME, NT or XP for ease of operation and reduced testing time shall be supplied along with the Test system.

Meter information and test results should be stored in a data base for search and reporting, and should also be available in ASCII format for easy importing into other application software.

It shall be possible for the user to easily construct their own reports or use the ones that come standard with the System.

The Software supplied shall support at least 500 standard test plans for all common meter types, and also permit the users define their own test plans.

Meter test results are to be stored to the database at the end of each test unless the test failed, in which case the software shall prompt the user for confirmation to save failed results to the database.

The Meter Test Plan shall comprise of a sequence of meter test points that are executed sequentially in such a manner that full functionality and accuracy of the meter is evaluated.

### **Quick Connection Adaptor**

A suitable adaptor for quick connection of the Meter Under Test to the Test setup shall also form part of the Test System. It shall be possible to connect all types of bottom connected meters to the adaptor.

### **CONDITIONS**

#### **EMD**

- (1) Tenderer should pay the specified amount towards Earnest Money Deposit as follows:
- (2) The Earnest Money Deposit specified above should be in the form of a Demand Draft/Banker Cheque payable at Thiruvananthapuram for the above amount from any of the Nationalised/Scheduled/Foreign Banks with branches in India payable to the Chief Electrical Inspector to Government of Kerala.
- (3) The EMD will not carry any interest.

- (4) The Earnest Money Deposit will be refunded to the unsuccessful tenderers.
- (5) Cheque will not be accepted towards EMD and the tenders shall be rejected if EMD is not paid in the prescribed manner.
- (6) Agreement in ` 100 Kerala Stamp Paper as per the Format given in the standard terms and conditions must be enclosed along with the Earnest Money Deposit.

#### **Bid Qualification Requirements (BQR)**

The Bidders shall become eligible to bid on satisfying the following Bid Qualification Requirements and on production of the required documentary evidence along with tender.

The bid shall be submitted by the manufacturer having manufacturing facility/or their branch office in India either directly or through their authorised dealers.

The bidder should be in a position to assume, on a single point responsibility basis, the full obligation and responsibility for supplying the materials within the specified time schedule.

The manufacturer must have ISO certification and have at least 10 years of experience in design and manufacturing of meter test bench.

Tenderers shall submit particulars of similar equipments supplied by them to some of the important customers in India or Abroad especially in tropical regions. Preference will be given to the manufacturer having his own organization or accredited representatives of long standing possessing suitable technical and installation experience.

The bidder should not have been Black Listed (De-barred from quoting further tenders) on the ground of poor performance/poor supply records from any Indian utility/test house.

Major components used in Test Bench like Voltage and current amplifier, Reference standard meter, etc. shall conform to safety requirement.

The manufacturer must have their own service/testing centre capable of repairing major components of offered test bench in India. Trained Engineers dedicated for trouble shooting and technical support should be permanently posted at service centre.

(2)

#### **Tender No.—3/2010-11/CEI**

Name of item — CT/PT Test Kit (with Std CT/Burden Box etc.)

Quantity — 1 (One)

Earnest Money Deposit — ` 30,000

Cost of tender form (Including VAT) :

Original — ` 4,700

Duplicate — ` 2,350

Closing date and time for sale of tenders — 16-2-2011 at 12 Noon

Due date and time for receipt of tenders — 16-2-2011 at 3 p. m.

Due date and time for opening of tenders — 16-2-2011 at 3.30 p. m.

Required number of tender copies — 2

Place at which tenders will be opened — In the Chamber of the Chief Electrical Inspector,  
Thiruvananthapuram.

*Note:*—Tender documents should be duly signed and stamped on each and every page and all Schedules duly filled in will be submitted by the tenderer along with his offer. Otherwise the offer will be liable for rejection.

உபகரணத்தின்றி பேச்  
நிர்த்துவம் — ஸி.ஓ.ி./பி.ஓ.ி.எண் கிர்—1 ஏண்டு.  
— 30,000.

பரைலாங் போர்த்தின்றி விலா (மூலம் வர்த்தித நிகுதி உல்லேபுடை):

அளவுத்	— 4,700.
பகுறப்	— 2,350.

பரைலாங் போரா வித்தகுந் அவசாந தீயதியும்  
— ஸமயவும் — 16-2-2011, 12 மணி.

புறிப்பிச்சுதும் ஸீத் செய்ததுமாய பரைலாங்ஸுகல்  
— ஸரிக்கிக்குந் அவசாந தீயதியும் ஸமயவும் — 16-2-2011 வெகுநேரம் 3 மணிவரை.

பரைலாங்ஸுகல் தூர்க்குந் தீயதியும் ஸமயவும் — 16-2-2011 வெகுநேரம் 3.30 மணி.

#### TECHNICAL SPECIFICATIONS

#### 1. Objective

To provide complete and comprehensive facilities for doing routine, acceptance and certification tests pertaining to accuracy requirements on Current Transformer & Potential Transformer for types of accuracy classes 0.5 & 1.0 generally confirming to relevant IS & IEC specifications.

#### 2. Scope

Design, engineering, manufacture, delivery, installation and commissioning Automatic Computerized CT & PT Test System in the Meter Testing and Standards Laboratory of Chief Electrical Inspector to Kerala. In addition to above, the successful bidder/vendor (hereinafter referred to as vendor) shall also be required to provide:

- (i) Operations Manuals including drawings.-1 set in hard copy, plus 1 set in CD form giving the soft copy version of all the manuals.
- (ii) Training to at least 5 personnel from the department on all aspects of operation and maintenance.
- (iii) Continued technical support during Guarantee period.
- (iv) List of Spare Parts & Consumable items.
- (v) *Features :*

The CT/VT test system shall be designed to test CTs over the range of 5....3200 amperes. The system shall be self contained and includes all the required power supplies to generate the test current, the appropriate reference CT, a set of burdens to load the test CT/VT to the required operating point.

Automatic CT/VT comparator to measure the errors of the test specimen transformer with respect to the reference transformer.

An automatic CT demagnetizer shall be provided so that the test CTs can be demagnetized prior to conducting the accuracy tests.

The system arrangement shall be such that all the controls shall be provided on the front panel of the cabinet while all the connections to the test including connections for CT specimen/VT are made on the rear of the cabinet. The rear end of the cabinet shall be fenced off for safety purposes.

The Automatic Instrument Transformer test system shall be designed to test CTs over the range of 5-3200A Amperes.

The Test System should have the following features:

- (1) Fully pre-wired comprehensive turn key test system
- (2) Suitable for CTs upto 3200A
- (3) Precision (0.005 Class) internal multi-ratio standard CT
- (4) Internal 4KA/8.8k VA current source

- (5) Instrument transformer test set with computer & printer interfaces
- (6) 2 Nos. Current Burdens (1 No. 5A & 1 No. 1A) & 4 Nos. Potential Burdens (3 Nos 110V & 1 No. 63.5V)
- (7) Automatic CT Demagnetizer

The Automatic CTPT Test bench shall comprise of :

- (1) An Automatic Instrument Transformer Test Set
- (2) High precision standard CT alongwith current source
- (3) CT burden set (2 Nos.)
- (4) An automatic CT demagnetizer
- (5) A control unit with variac CT adjustable sources with selection
- (6) VT burden Boxes (4 Nos.)
- (7) A set of leads for CT & VT connections

(1) *Automatic Instrument Transformer Test Set :*

It shall be comprised of an Instrument Transformer Comparator which is a fully automatic comparator capable of comparing both CTs and VTs.

The input ranges of the instrument shall be 1400 volts on the VT side and 0.05 to 20 amperes on the CT side (5 ampere input) and 0.01 to 4 amperes (1 ampere input).

The comparator shall have a Ratio Error measuring range of upto 20% for both CTs and VTs.

The instrument shall be controlled through its keyboard or the RS232 port using an IBM compatible PC.

A USB printer port & RS232 PC Port are available to connect to the printer and PC/Laptop. The comparator is designed to compare CTs/VTs of nominally the same ratio.

**Protection :**

Overload protection on line and regulator.

Zero start safety interlock.

Safety interlock switch for connecting to safety barrier.

(2) *Adjustable Current Source :*

Available ratios :

The CT shall be equipped with a tapped primary, tapped secondary winding and provide a multiplicity of ratios. Using the above current outputs, the following ratios shall be available : 5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60, 75, 80, 90, 100, 120, 125, 150, 160, 175, 180, 240, 250, 300, 350, 375, 400, 500, 600, 700, 750, 800, 900, 1000, 1200, 1250, 1400, 1500, 1600, 1800, 2000, 2400, 2500, 3000, 3200.

(3) *Current Transformer Burdens :*

The Current transformer burdens shall include :

Current Transformer burdence for 5 ampere and 1 ampere, 50 Hz, shall be rated for 40, 20, 10, 7.5, 6.25, 5VA @ 0.8PF & 3.75, 2.5, 1.25 & 1VA at 1.0PF

(4) *CT Demagnetizer :*

An Automatic CT demagnetizer shall be provided within the test system. The demagnetizer shall be suitable for demagnetizing CTs of all ratios, having either 5 or 1 ampere secondary winding.

(5) *Potential Transformer Burdens :*

The Potential transformer burdens shall include :

Potential transformer burdens shall be of 110 V and 63.5V. They shall be rated for 0 to 207.5 VA in steps of 2.5 VA at 0.8 power factor. The Burden elements shall be 2.5, 5, 10, 20, 40, 50, 80VA @ 0.8PF (Total 207.5VA)

For testing of Three Phase VTs 3 Nos. of Potential Burdens shall be provided with 110V Input Also PT Burden Box 63.5 V one no shall be provided for testing single phase VT's.

**(6) Power Leads and Connecting Cables :**

The equipment shall be wired to a 220 volt source capable of supplying 25 amperes with adequate length and size of power cable.

The equipment shall have the typical leads required to connect CTs or PTs and conduct tests. Such leads include the following :

- (1) VT Secondary leads, 4 conductor arrangements for avoiding lead drop in the test set up
- (2) VT Primary leads
- (3) CT Secondary leads designed to load the test CT secondary circuit to ~1 VA (3 meters).
- (4) 100 ampere primary leads.
- (5) 300 ampere primary leads.
- (6) 1,000 ampere primary leads.
- (7) Bus bars for testing toroidal CTs.
- (8) Safety switch.

**(7) Physical Information :**

The equipment shall be housed in a cabinet consisting of two 19-inch racks. The overall size of cabinet shall be approximately 1.5 meters long, 2 meters high and 1.2 meters deep.

**Documentation**

One set of following documents in print form (hard-copy) shall be supplied along with each test system :

Operating manual of each component of test equipment

Calibration certificate/test certificate of complete test system/Test certificates of individual components of the system issued by the manufacturer.

In addition, the successful bidder shall supply one CD set containing the soft-copies of the Operation Manuals and Test Reports all the documents mentioned above.

**Installation and Commissioning**

The supplier shall be responsible to install and commission the CT & PT test equipment at the locations to be specified by the Purchaser within the territorial area of Department of Electrical Inspectorate, Kerala. The supplier shall submit the layout plan, installation proposal and electric supply requirements within 4 weeks from the date of receipt of the detailed purchase order to the Purchaser.

**Calibration :**

Periodic calibrations procedure is to be furnished by vendor.

**Spares**

List of recommended spares for two years normal use with price list to be provided along with the offer by the bidder. The sufficient spares shall be stocked in INDIA to cater urgent requirements.

**Training**

The supplier shall provide training of the meter test equipment to at least five personnel from the department on all aspects of operation and maintenance for upto three working days, first at the time of initial commissioning and thereafter upto three more times as per the desire communicated in writing by the Chief Electrical Inspector, Department of Electrical Inspectorate, Kerala. All expenses for providing such training support shall be borne by the vendor.

**Guarantee**

The equipment shall be guaranteed for trouble free operation for a period of 12 months from the date of commissioning.

## **Inspection**

Inspection of the CT & PT test equipment, in accordance with this technical specification and the GTP, as well as the general terms and conditions of the relevant tender specifications, shall be done at manufacturer's Works in or outside India, as the case may be. Reasonable facilities shall be provided by the vendor for the same.

## **CONDITIONS**

### **Earnest Money Deposit :**

- (1) Tenderer should pay the specified amount towards Earnest Money Deposit as follows:
- (2) The Eamest Money Deposit specified above should be in the form of a Demand Draft/Banker Cheque payable at Thiruvananthapuram for the above amount from any of the Nationalised/Scheduled/Foreign Banks with Branches in India payable to the Chief Electrical Inspector to Government of Kerala.
- (3) The EMD will not carry any interest.
- (4) The Earnest Money Deposit will be refunded to the unsuccessful tenderers.
- (5) Cheque will not be accepted towards EMD and the tenders shall be rejected if EMD is not paid in the prescribed manner.
- (6) Agreement in ~ 100 Kerala Stamp Paper as per the Format given in the standard terms & conditions must be enclosed along with the Earnest Money Deposit.

### **Bid Qualification Requirements (BQR)**

The Bidders shall become eligible to bid on satisfying the following Bid Qualification Requirements and on production of the required documentary evidence along with tender.

The bidders of the CT&PT testing system must have at least 10 years experience in design and manufacture of such systems including their components (except PC related hardware and software). They should also have supplied at least two CT & PT testing systems, which is similar or better than the one specified in this specification and which should have been insuccessful operation for at least 3 years at any NABL accredited laboratory in India on the date of submisssion of their bids. The bidders must submit attested documentary evidence to prove compliance with both these requirements along with their bids failing which their offer shall be rejected.

The bidders should have trained engineers dedicated for trouble shooting and technical support permanently posted in India. Full details of the number of engineers and their place/s of HQ/current posting etc. are to be provided by the bidder in their offer.

The bids may be submitted only by the manufacturers of CT & PT testing equipment or their representatives, duly supported by a certificate issued by the manufacturers authorising and supporting the offer made by them.

The bidder should not have been Black Listed (De-barred from quoting further tenders) on the ground of poor performance/poor supply records from any Indian utility/test house.

(3)

### **[Tender No.—04/2010-11/CEI]**

Name of items	— Tong Tester (Clamp Meter), Earth Tester, Insulation Tester (5 kV), Sound Level Meter
Quantity (Nos.)	— Tong Tester (Clamp Meter)—14 Earth Tester—14, Insulation Tester—14, Sound Level Meter-1
Earnest Money Deposit	— ~ 73,000.

Cost of tender form (Including VAT):

Original	—	11,400
Duplicate	—	5,700
Closing date and time for sale of tenders	—	16-2-2011 at 12 Noon
Due date and time for receipt of tenders	—	16-2-2011 at 3 p. m.
Due date and time for opening of tenders	—	16-2-2011 at 3.30 p. m.
Required number of tender copies	—	2
Place at which tenders will be opened	—	In the Chamber of the Chief Electrical Inspector, Thiruvananthapuram

*Note* :—Tender documents should be duly signed and stamped on each and every page and all Schedules duly filled in will be submitted by the tenderer along with his offer. Otherwise the offer will be liable for rejection.

## ഉപകരണത്തിന്റെ പേര്

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## SPECIFICATION

1. The Digital Tong tester (Clamp Meter) shall measure True RMS Current

Display type	— Dual display with simultaneous display of Voltage & Current
AC Current Range	— 0.05A—1000A
DC Current Range	— 0.05A—1400A
AC Current Range	— 0.05V—1000V
DC Current Range	— 0.05V—1400A
Resistance Range	— 10,000 Ohms
Temperature Measurement	— Up to 900 Degree C with thermocouple
Frequency range	— 10 kHz
Functions	— MIN, MAX, Peak, Hold
Electrical Safety	— CAT III 1000V & CAT IV 600V as per IEC 61010
Jaw Opening	— 40 mm (Min.)

The Clamp shall have facility for Audible continuously check.

The Clamp shall be supplied with necessary probes, thermocouple sensor, carry bag and user manual.

## 2. Digital Earth Tester

### *General Requirements*

The Digital Earth Tester shall:—

- be capable of 2,3 and 4 point testing without the need for shorting links
- have selectable 25 V or 50 V output
- be supplied complete with lead and stake kit
- be possible to test with simple one button operation
- be supplied with hardwearing Carry use
- be delivered with calibration certificate
- Automatic Connection Check
- Excessive Noise indication on display

### *Technical Specifications*

Ingress protection	—	IP54 or better
Noise rejection	—	40 Vpk to pk
Test Frequency	—	variable 94 Hz, 105 Hz, 111Hz and 128 Hz
Resistance range	—	0.01 to 200000 Ohm
Resistance Accuracy	—	2% ± 3 digits
Earth Voltage range	—	0 - 100 V
Earth voltage accuracy	—	2% ± 2V
Display	—	LCD
Battery type	—	NiMH rechargeable batteries (AA size) x 8 Nos.
Safety	—	EN61010-1 CAT IV 100 V
EMC	—	In accordance with IEC61326 including amendment No. 1

## 3. 5kV Insulation Tester

### (1) Measurement & Display parameters:—

Insulation Resistance (IR), Polarisation Index (PI), Step voltage (SV) tests and Dielectric Discharge (DD), Leakage current, capacitance & Time constant

- (2) Mains or battery powered with rechargeable batteries
- (3) Measurement from 10 k Ohm to 15 T Ohm
- (4) Digital/analogue backlit display
- (5) Instrument should display direct reading of voltage across the test piece when the test is in progress
- (6) Instrument should display leakage current & I.R.
- (7) Should meet requirements of EN61010.
- (8) CAT IV 600 V
- (9) Download of test results via USB/RS 232 & Download Manager Software shall be provided along with.
- (10) Real time output:—Serial, once per second of test voltage, current and resistance
- (11) Ingress Protection:—IP 45 or better
- (12) Should have Guard Terminal

Voltage input range : 90-260 V, 50Hz

Test voltages :-500V, 1000V, 2500V&5000V (Standard) and 50 V to 1 kV in 10 V steps, 1kV to 5kV in 25V steps (variable)

Accuracy (23° C) :

±5% to 1T Ohm, ± 20% to 10 T Ohm

Short circuit/charge current: 5 mA @ 5kV

Capacitor charge time:<1.5 seconds per  $\mu$ F at 5mA to 5kV

Capacitor discharge time:<120ms per  $\mu$ F to discharge from 5000 V to 50 V.

Capacitance measurement : 10nF to 50  $\mu$ F (measured with test voltage>500V)

Capacitance measurement accuracy (23° C) : ± 5% ± 5nF

Voltage output accuracy (0°C to 23°C) :

±4%,- 0% ±10 V of nominal test voltage at 1GOhm load

Current measurement range:0.01 nA to 5 mA

Current measurement accuracy (23°C) : ±5% ±0.2nA at all voltages

Display : Analogue/digital 3 digits

Interference rejection : 1 mA per 250V, 2 mA maximum

Timer range: Up to 99 minutes & 59 seconds from start of test

Test regimes : automatic IR, PI, DAR, SV and DD.

Data storage :-Voltage, test time, leakage current, resistance, PI, DAR, DD, capacitance and time constant

Lead set :Three leads with compact clamp, flexible silicon insulated.

Humidity : 90% RH non-condensing at 40° C

Safety

Should meet the requirements of EN61010-1: 2001 CATIV 600 V

EMC

Should meet the requirements of EN61326-1: 2006 for use in heavy industrial areas.

#### 4. Sound Level Meter

Measurement Range	—	30 130 dB
Accuracy	—	±1.4dB (ref 94 dB@ 1 KHz)
Sampling Rate	—	2 times/sec
Frequency Weighting	—	A/C
Time Weighting	—	FAST, SLOW
Frequency Range	—	20 Hz 8 KHz
Microphone	—	½ inch Electrets condenser microphone
Power Source	—	1.5 V AA size battery x 4
Battery Life	—	30 hours (Alkaline)
Dimensions	—	272 (L) x 83 (W) x 42 (H) mm
Weight	—	Approx. 390g

Sound Level Meter shall comply the following:

Complies with IEC 61672 - 1 class 2 standard

31,000 Records Data Logger

Manual Reading Recording Memory (99 points)

LCD Recording Readout (99 memory recording)

PC Interface with Windows Software

AC/DC Signal Output

Resolution 0.1 dB

## CONDITIONS

### **Earnest Money Deposit**

- (1) Tenderer should pay the specified amount towards Earnest Money Deposit as follows:
- (2) The Earnest Money Deposit specified above should be in the form of a Demand Draft/Banker Cheque payable at Thiruvananthapuram for the above amount from any of the Nationalised/Scheduled/Foreign Banks with Branches in India payable to the Chief Electrical Inspector to Government of Kerala.
- (3) The EMD will not carry any interest.
- (4) The Earnest Money Deposit will be refunded to the unsuccessful tenderers.
- (5) Cheque will not be accepted towards EMD and the tenders shall be rejected if EMD is not paid in the prescribed manner.
- (6) Agreement in ^ 100 Kerala Stamp paper as per the Format given in the standard terms & conditions must be enclosed along with the Earnest Money Deposit.

### **Bid Qualification Requirements (BQR)**

The Bidders shall become eligible to bid on satisfying the following Bid Qualification Requirements and on production of the required documentary evidence along with tender.

The bid shall be submitted by the manufacturer having manufacturing facility/or their branch office in India either directly or through their authorised dealers.

The bidder should be in a position to assume, on a single point responsibility basis, the full obligation and responsibility for supplying the materials within the specified time schedule.

The manufacturer must have ISO certification and have at least 10 years of experience in design and manufacturing the above instruments.

Tenderers shall submit particulars of similar equipments supplied by them to some of the important customers in India or Abroad especially in tropical regions. Preference will be given to the manufacturer having his own organization or accredited representatives of long standing possessing suitable technical and installation experience.

The bidder should not have been Black Listed (De-barred from quoting further tenders) on the ground of poor performance/poor supply records from any Indian utility/test house.

The manufacturer must have their own service/testing centre capable of repairing major components of offered instruments in India. Trained Engineers dedicated for trouble shooting & technical support should be permanently posted at service centre.

(4)

### **Tender No.—5/2010-11/CEI**

Name of item	—	AC HV Test Kit (100 kV)
		DC HV Test Kit (160 kV)
Quantity	—	1 each
Earnest Money Deposit	—	^ 45,000
Cost of tender form (Including VAT) :		
Original	—	^ 7,100
Duplicate	—	^ 3,550
Closing date and time for sale of tenders	—	16-2-2011 at 12 noon
Due date and time for receipt of tenders	—	16-2-2011 at 3 p. m.
Due date and time for opening of tenders	—	16-2-2011 at 3.30 p. m.
Required number of tender copies	—	2
Place at which tenders will be opened	—	In The Chamber of the Chief Electrical Inspector, Thiruvananthapuram.

*Note :—*Tender documents should be duly signed and stamped on each and every page and all Schedules duly filled in will be submitted by the tenderer along with his offer. Otherwise the offer will be liable for rejection.

SPECIFICATION

**1. AC High Voltage Test Kit (100 kV)**

- (1) The unit shall be suitable for testing aerial bucket trucks & with 50-kV tap with doubled output current for testing bucket liners
- (2) It shall have a built-in four-range output current meter with guard circuit
- (3) Four-range output kilo voltmeter accuracy of which shall be unaffected by sample loading
- (4) High-speed over voltage and over current trip-out for holding test voltage reading at instant of trip-out
- (5) Output signals shall be provided for both voltage and current meters, on all ranges, to permit external recording of test data.
- (6) Zero-start safety interlock system with provision for external safety interlocks and warning lights
- (7) The Control Unit & High Voltage units shall be separate with a minimum length of 15ft/4.5 meters for the interconnection cables to ensure operator safety.
- (8) Accuracy:  $\pm 1\%$  of full scale, +LSD
- (9) Peak-sensing kilo voltmeter circuit, shall be calibrated in rms for a pure sine wave, for overcoming metering errors caused by power-line waveform distortion.
- (10) Adjustable over current and over voltage protection, with trip levels variable from 10 to 110%, to provide high-speed trip-out of test voltage if either limit is exceeded due to high-voltage breakdown or other causes.
- (11) Digital test timer, shall be provided as standard and shall display both preset test period and elapsed test time in the range of 0 to 99.99 minutes. It shall automatically control motorized voltage regulator and permit more uniform test cycles.
- (12) Hold circuit shall freeze indication of test voltage and time when a tripout occurs. This relieves the operator of continuously monitoring test status.
- (13) Ramp and dwell control shall have motorised voltage regulator systems & shall permit test voltage ramping from zero to a preset voltage stop level. Dwell time at the voltage stop level is controlled by the test timer. At the end of the dwell time, voltage shall automatically be ramped down to zero, Light up TEST COMPLETE indicator and then de-energise high voltage. This capability ensures a uniform test cycle and frees the operator to perform other functions.
- (14) EMERGENCY HV OFF button shall be provided. Provision for external test-area interlocks & warning lights shall be provided.
- (15) Output: Analog, 0 to 5 Vdc for graphic recording.

*Technical Specifications :*

Input Supply	240 V AC, 50 Hz
Output Supply	0-100 HV, 150 mA
Duty Cycle	15 min. ON, 45 min, OFF

*Instrumentation*

Meters	Analog, linear scale
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*Kilo Voltmeter:*

Range	0 to 10/20/50/100kV
Type	Peak Responding, RMS Calibrated
Accuracy	$\pm 2\%$ fullscale on 100-kV range, $\pm 3\%$ fullscale on 10-, 20-, 50-kV ranges
Output for external Recording	0 to 5 Vdc

*Milli Ammeter:*

Range	0 to 1.5/15/75/150mA
Accuracy	$\pm 2\%$ fullscale on 150-mA range, $\pm 3\%$ fullscale on 1.5,15-,75-, mA ranges
Type	Average responding, rms calibrated, provision for guarded use
Output for external recording	0 to 5 Vdc

*Cables:*

Input Power Cable	240V, minimum 3m long
inter unit connection cable	4.5 m long (min) with suitable connectors on both ends
Inter unit signal cable	4.5 m long (min) with suitable connectors on both ends

Since the unit is to be used for field tests, the unit shall be compact and the total weight of the unit shall not exceed 230 kg excluding cables.

## **2. DC High Voltage Test Kit (160 kV)**

*General:*

The DC Hi-Pot Testers shall be capable of delivering 160 kV DC at 5mA for 5 min; 1.5 mA continuous.

*Safety:*

For enhanced operator safety, the Control Unit shall be separate from the HV Unit. The maximum Voltage present on the Control Unit shall not be more than the input AC Voltage.

The Control Unit & HV Unit shall be interconnected with a suitably rated cable with adequate safety requirements.

*The DC Hi-Pot Testers shall have the following Safety features:*

- Bipolar ammeter that displays the magnitude of the discharge current from the unit under test
- Input-supply-line circuit breaker
- Output current overload relay
- Zero-start interlock for high-voltage output
- Pushbutton controls and indicating lights for high-voltage ON/OFF
- Full circuit-breaker protection against internal damage by overloads, surges or test sample breakdown
- Connection for external permissive and safety interlocks

### *Portability*

The HV unit shall be Air insulated, light weight and convenient & portable allowing a single operator to transport it in to the field.

The DC Hi-POT shall have Complete Internal Guard Circuit/Guard Connection on High-Voltage Output Cable that:—

- Intercepts stray surface leakage currents which could interfere with the measurement.
- Eliminates the need for an extra lead to hook up the guard connection.
- Ensures highly accurate measurements.

### *Technical Specification*

The DC Hi-pot Tester Voltage shall be continuously variable and the user shall set test voltage to intermediate values as required.

Input 220/240V AC, 50/60Hz

### **Ammeter Ranges**

0 to 19.9  $\mu$ A

0 to 199  $\mu$ A

0 to 1.99 mA

0 to 5 mA

Resolution:—To 0.1  $\mu$ A on lowest range Accuracy:  $\pm 2\%$

### **Voltmeter**

Resolution:— To 100 V over entire range Accuracy:  $\pm 2\%$

### **Ripple**

Less than 2% on capacitive samples at continuous rated output

Shall be suitable for Operation in high temperature upto 55° C @ RH of 90% noncondensing

### **Dimensions & Weight**

The 160 kV DC Hipot shall be compact and the dimensions shall not exceed 740 mm x 305 mm x 305 mm for the HV unit and 510 mm x 305 mm x 318 mm for the control unit. Weight shall not exceed 35kg. for the HV unit & 11kg. for the control unit.

### CONDITIONS

#### **Earnest Money Deposit**

- (1) Tenderer should pay the specified amount towards Earnest Money Deposit.
- (2) The Earnest Money Deposit should be in the form of a Demand Draft/Banker Cheque payable at Thiruvananthapuram for the amount from any of the Nationalised/Scheduled/Foreign Banks with Branches in India payable to the Chief Electrical Inspector to Government of Kerala.
- (3) The EMD will not carry any interest.
- (4) The Earnest Money Deposit will be refunded to the unsuccessful tenderers.
- (5) Cheque will not be accepted towards EMD and the tenders shall be rejected if EMD is not paid in the prescribed manner.
- (6) Agreement in ~ 100 Kerala Stamp Paper as per the Format given in the standard terms & conditions must be enclosed along with the Earnest Money Deposit.

## **Bid Qualification Requirements (BQR)**

The Bidders shall become eligible to bid on satisfying the following Bid Qualification Requirements and on production of the required documentary evidence along with tender.

The bid shall be submitted by the manufacturer having manufacturing facility/or their branch office in India either directly or through their authorised dealers.

The bidder should be in a position to assume, on a single point responsibility basis, the full obligation and responsibility for supplying the materials within the specified time schedule.

The manufacturer must have ISO certification and have atleast 10 years of experience in design and manufacturing of the offered equipments.

Tenderers shall submit particulars of similar equipments supplied by them to some of the important customers in India or Abroad especially in tropical regions. Preference will be given to the manufacturer having his own organization or accredited representatives of long standing possessing suitable technical and installation experience.

The bidder should not have been Black Listed (De-barred from quoting further tenders) on the ground of poor performance/poor supply records from any Indian utility/test house.

The Offered Test kits shall conform to safety requirement.

The manufacturer must have their own service/testing centre capable of repairing major components of the offered equipments in India.

(5)

### **Tender No.—6/2010-11/CEI**

Name of item	—	Decade Resistance Box suitable for 5 KV
Quantity	—	1 (One)
Earnest Money Deposit	—	₹ 3,500
Cost of tender form (Including VAT) :		
Original	—	₹ 730
Duplicate	—	₹ 365
Closing date and time for sale of tenders	—	16-2-2011 at 12 Noon
Due date and time for receipt of tenders	—	16-2-2011 at 3 p. m.
Date and time for opening of tenders	—	16-2-2011 at 3.30 p. m.
Required number of tender copies	—	2
Place at which tenders will be opened	—	In The Chamber of the Chief Electrical Inspector, Thiruvananthapuram.

*Note :—*Tender documents should be duly signed and stamped on each and every page and all Schedules duly filled in will be submitted by the tenderer along with his offer. Otherwise the offer will be liable for rejection.

## CONDITIONS

## **Earnest Money Deposit**

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- (6) Agreement in ^ 100 Kerala Stamp paper as per the Format given in the standard terms & conditions must be enclosed along with the Earnest Money Deposit.

## **Bid Qualification Requirements (BOR)**

The Bidders shall become eligible to bid on satisfying the following Bid Qualification Requirements and on production of the required documentary evidence along with tender.

The bid shall be submitted by the manufacturer having manufacturing facility/or their branch office in India either directly or through their authorised dealers

The bidder should be in a position to assume, on a single point responsibility basis, the full obligation and responsibility for supplying the materials within the specified time schedule.

The manufacturer must have ISO Certification and have at least 10 years of experience in design and manufacturing of the offered equipments.

Tenderers shall submit particulars of similar equipments supplied by them to some of the important customers in India or Abroad especially in tropical regions, preference will be given to the manufacturer having his own organization or accredited representatives of long standing possessing suitable technical and installation experience.

The bidder should not have been Black Listed (De-barred from quoting further tenders) on the ground of poor performance/poor supply records from any Indian utility/test house.

The manufacturer must have their own service/testing centre capable of repairing the offered items. Trained Engineers dedicated for trouble shooting and technical support should be permanently posted as service centre.

O/o the Chief Electrical Inspector,  
Housing Board Buildings,  
Santhi nagar,  
Thiruvananthapuram-695 001.

(Sd.)  
*Chief Electrical Inspector.*